

WHAT IS CLAIMED IS:

1. A light scattering particle size distribution measuring apparatus, comprising:
 - a light source capable of emitting laser light;
 - a light shutter modulating said laser light;
 - a beam expander expanding said laser light;
 - a material cell containing a material sample;
 - a condensor lens capable of focusing transmitted and scattered light;
 - a photodetector capable of receiving said scattered and transmitted light;
 - at least one optical axis adjustment mechanism capable automatically aligning and maintaining a central position of said photodetector with a central position of the said light source;
 - a multiplexer in communication with said photodetector and said optical axis adjustment mechanism; and
 - a CPU in communication with said multiplexer and a personal computer, said CPU capable of always monitoring a central position of said light source and said photodetector, wherein said CPU is capable of automatically providing control signals to said at least one optical axis adjustment mechanism to maintain said central positions of said light source and said photodetector.
2. The apparatus of claim 1, further comprising a mirror; said mirror positioned between said light source and said light shutter.
3. The apparatus of claim 1, further comprising a first cuneal prisms and a second cuneal prism, wherein said first and second cuneal prisms positioned between said beam expander and said material cell.

4. The apparatus of claim 1 wherein said optical axis adjustment mechanism comprises an X-Y optical positioning stage.
5. The apparatus of claim 1 wherein said optical axis adjustment mechanism in communication with at least one device selected from the group consisting of said light source, said mirror, said beam expander, said condensor lens, and said photodetector.
6. A light scattering particle size distribution measuring apparatus, which irradiates a sample with light from a light source, detects the resulting scattered light from the sample by a photodetector, and measures the size distribution of particles in the sample on the basis of a scattered light intensity pattern obtained, comprising a mechanism capable of automatically adjusting the central positions of the light source and the photodetector in a state most suitable for measuring by always monitoring quantity of light antecedent to irradiating a sample and quantity of light on a photodetector after irradiating a sample and adjusting a position of a light source, a photodetector or an optical device between the light source and the photodetector.
7. A light scattering particle size distribution measuring apparatus, which irradiates a sample with light from a light source, detects the resulting scattered light from the sample by a photodetector, and measures the size distribution of particles in the sample on the basis of a scattered light intensity pattern obtained, comprising an optical axis adjustment mechanism capable of holding control data antecedent to a decrease of a quantity of light when the quantity of light on a photodetector is significantly lowered compared with a quantity of light antecedent to irradiating a sample by always monitoring the quantity of light antecedent to irradiating a sample and the quantity of light on a photodetector.
8. A method of using the scattering of light to measure the particle size distribution within a sample, comprising:
- irradiating a sample with light from a light source;

detecting a resulting scattered light from the sample by a photodetector;

measuring a size distribution of particles in the sample on the basis of a scattered light intensity pattern obtained; and

storing and retrieving an optimal position in a range of a quantity of light on a photodetector.

9. A method of using light scattering to measure particle size within a sample of material, comprising:

irradiating a sample with light from a light source;

detecting scattered light from the sample with a photodetector;

measuring a size distribution of particles in the sample on the basis of a scattered light intensity pattern obtained; and

aligning and maintaining a central position of said photodetector with a central position of the said light source with an automatic adjustment mechanism.